Disrupting the Implementation Gap with Digital Technology in Healthcare Distance Education: Critical
Insights from an e-Mentoring Intensional Network Practitioner Research Project
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DISRUPTING THE IMPLEMENTATION GAP WITH DIGITAL TECHNOLOGY IN HEALTHCARE DISTANCE EDUCATION: CRITICAL INSIGHTS FROM AN E-MENTORING INTENSIONAL NETWORK PRACTITIONER RESEARCH PROJECT

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Abstract

Effective professional distance education is urgently needed to develop a well-trained workforce and improve impact on healthcare. However, distance education initiatives have had mixed results in improving practice. Often, successful implementation fails to leverage insights on the social and emergent nature of learning in networks.

This paper critically evaluates a 3-year practitioner research study to implement an e-mentoring programme with a new digital tool to support healthcare professionals from developing countries. As compared to a conventional top-down project planning and management approach to execute programmes, I argue that implementing a practitioner research approach is more effective in producing change to educational practice. This is because it built an 'intensional network' of practice to link peers, mentors and experts strategically to disrupt reified practices, drive collaboration and knowledge sharing across time and distance.

As global health confronts the reality of a networked sociality, I urge curriculum designers to activate intensional networks to address the practical problems of implementing new digital technologies into distance education for health care professionals that result in dynamic changes to practice.

Keywords: agency; Bourdieu; distance education; e-mentoring; health care professional development; intensional network; practitioner research; networked learning

Introduction

The World Health Organization (WHO) has recognized that pressing health needs across the globe cannot be met without a well-trained health workforce (WHO, 2006). Addressing this crisis with collaborative digital technologies will require more and better research on the effectiveness of various healthcare distance education models that improve impact on practice and patient care, while meeting the needs of busy professionals in developing countries (Horton, 2010; Taylor et al., 2008).

Current research on healthcare distance education in health care (Knebel, 2001) takes a deterministic and retrospective approach to measuring efficacy and effectiveness. Mainly focused on the content and processes of courses, such research often misses richer data on how contextual factors may influence implementation outcomes. Pedagogical models used to design distance education are based on social constructivist learning principles (McPherson & Nunes, 2004) that, while providing useful guidance, shed little critical light on why certain implementation strategies may work in certain situations and not others, and on educators' strategic roles in shaping practices with digital technologies in today's global networked sociality

(Wittel, 2001). Policy calls for a 'systems approach' (WHO, 2009), changing mindsets (WHO, 2010) and 'nurturing a culture of inquiry' (Bhuta et al., 2010) do not critically address the institutional processes and contextual barriers of implementing technologies. Yet, these issues have been identified as crucial to effectively manage change when implementing educational technology (McPherson & Nunes, 2004) together with transferring the latest scientific research to improve healthcare in developing countries (Zachariah et al., 2009).

Context

To begin to tackle these issues strategically, this paper presents a critical evaluation of the implementation of a unique innovation in healthcare distance education using digital technologies undertaken by a Non-Governmental Organisation (NGO) in the global health sector in Geneva, Switzerland. This programme, the online Abstract Mentoring Program (AMP) ran over three cycles in 2008-2010 at the International AIDS Society (IAS), the world's leading society for HIV researchers and professionals. In addition to organising scientific conferences, the IAS also provides healthcare distance education through its Professional Development programmes. As part of reviewing its programmes, the programme team at the IAS wanted to improve the quality of scientific abstracts that were submitted, as well as the quantity of abstracts that were presented from developing countries. A previous version of an abstract writing programme had used a simple email correspondence to link abstract writers to mentors, but the impact of the programme on improving the practice of abstract writing had been low. The new programme's aim is to help diverse types of HIV researchers and professionals from around the world prepare abstracts of their work, as a crucial first step to getting their work presented at the International AIDS Conferences. It was designed by conceptualising scientific writing as a social literacy practice done with peers and mentors in context, as opposed to merely a skill to be taught. Professionals begin by submitting draft abstracts for review by mentors. A mentors' network of volunteer peers and experts was cultivated to deepen collaboration between the IAS and its members by inviting them to participate in the programme. Members with experience were invited to become mentors who give structured feedback on draft abstracts. The online submission consists of a step-by-step template that was developed in-house and integrated into existing websites for easier access. In addition, online self-help tools are provided to increase researchers' understanding of the processes of abstract writing, submission, and selection criteria.

Evaluation results from this project have been discussed in prior work (Singh, 2010, 2011). In this paper, I first present the research conceptual framework and methodology for implementing this programme as a practitioner research project. I then illustrate the social practices of an 'intensional network' (Nardi et al., 2002). Finally, I discuss the implications of these strategies for navigating the complexities of practice to improve the implementation of digital technologies in healthcare distance education.

Conceptual framework

An intensional network is a "personal social network workers draw from and collaborate with to get work done." (Nardi et al., 2002, p. 207) As compared to online communities of practice (Wenger, 1998), I chose this design metaphor for two reasons. Firstly, it respects the agency of professionals. There is less need for ongoing meeting and trust because it recognises how people work in a strategic/intensional way. Secondly, this approach allows educators' to change their aims – from improving the acquisition of knowledge and skills to facilitating the intentionality of a network. This responsive approach facilitates linking up individuals strategically. It empowers all participants to choose to participate and seek desired and meaningful learning opportunities

through their agency with digital technologies to acquire information, opinion and support as and when needed to solve problems. An intensional network thus overcomes the limitations of online communities, which waste time and money in trying to subsume individual agency into a collective collaborative that eventually becomes reified, does not respond to change and becomes insular (Singh et al., 2012). In contrast, an intensional network relies on informal and weak connections to enable educators to mediate continuous learning processes that are customisable by participants to serve their needs while serving programme goals. Overall, the great advantage of an intensional network approach for implementing digital technologies and improving healthcare distance education is that is more dynamic and can more easily and quickly respond to change, as I will show below.

I define implementation from a practice lens (Bourdieu, 1977) to emphasize its socially situated and emergent nature. As educators, project team members, learners and managers engage in these social processes, they are reproducing cognitive and social structures at different levels of an organization, thereby creating change over time. The emphasis shifts from implementation to implementing. Change to practice is thus not a fixed state but is being achieved continually – change *in* practice. Curriculum design is not separate from or prior to delivery but an emergent process. In this light, I reject the conventional Kirkpatrick four-level model (1994) for evaluating outcomes, which has been critiqued for collecting outcomes data after an intervention, and downplaying the complex variables that can influence change (Bates, 2004).

A practice lens to implementation delivers two benefits to overcome the traditional approaches to evaluating healthcare distance education that ignore context and processes. Firstly, a practice lens allows practitioners to perceive their work as a 'knowing in practice' (Orlikowski, 2002; Fenwick, 2011) rather than a recipe of must-have checklist items to prove their 'competence'. It allows implementers to pay sensitive attention to the wider social context and intentionally facilitating critical interactions to enable change in the moment to emerge, real time and online. Second it allows for longitudinal observation of the effects of specific actions to implement digital technologies in producing 'hard to measure' outcomes, such as access and quality. Educators can then identify the barriers and opportunities to improving implementation to enhance uptake and usability on a network scale.

Methodology

This paper uses practitioner research to explore how a healthcare distance educator in a global health context collaborated with his intensional network to implement a distance education intervention targeted at developing country health professionals.

Practitioner research helped me to resolve two problems I faced with current evaluation approaches. Firstly, it allowed for a critique and redesign of context necessary to address structural barriers to changing educational practice (Carr and Kemmis, 1986; Zeichner, 1993). Secondly, practitioner research allows educators to surface issues, negotiate values and resolve them quickly before they hamper smooth implementation. Co-constructing practical knowledge in this manner (Altrichter, Posch and Somekh, 1993) improves educational practice continuously and flexibly.

The study draws on data from my extensive reflection notes as I was actively involved in the e-mentoring project, and in observing daily project work (e.g. team meetings, piloting and testing, administering, monitoring, communicating and engaging with stakeholders). My initial perceptions were then triangulated with quantitative and qualitative survey data collected for routine project monitoring and evaluation reporting over 2 cycles of the project, at the IAS 2009

and AIDS 2010 conferences respectively (Singh, 2010, 2011). I analysed my data inductively to look for and categorise the social practices that I initiated, or engaged with, and how the project shaped the network. This approach enables a critical analysis and reflection on my work in a unique digital space. The vignettes I detail below provide important insights into the ways in which practices are produced during implementation. The wider theoretical and policy context of health care capacity building, professional development, distance education and e-mentoring was explored through a literature review across journal articles, WHO, UNAIDS and USAID project and policy documents, grey literature, and by coordinating parallel education programs with emerging networks of junior professionals in developing countries and subject matter experts in HIV/AIDS and public health.

Before presenting my findings, it is worth reading some feedback indicating the value of the initiative. The excerpts provided below are from the AIDS 2010 conference evaluation report (IAS, 2010):

> *"It is not easy for young scientists to write an abstract; with this programme everything was easier."*

> *"This is the best programme that I ever got from conference organizers."*

> *"The programme helped me realize important things I thought were not necessary."*

> *"I really appreciated contributing to the AMP and (helping) authors of abstracts I read and I would like to state I will be happy to continue helping this way."*

> *"It is a great initiative, congratulations!"*

> *"It is well structured and well organized."*

Findings

Description 1 – Building an intensional network

To accomplish my goal of implementing digital technologies to improve the AMP programme design and learning outcomes, I decided to build an intensional network within the workplace, and across the global 15,000 members of the organization. Using a project management approach, with a plan and timeline, I first built a cross-departmental team to provide technical and strategic expertise. I used technologies such as e-mail, Skype, Microsoft SharePoint, and SQL back office to lead and coordinate, rather than formal meetings. Members appreciated the fluid and flexible approach, which responded well to their own current work and different time lines, so they could participate when their skills were required.

Prior to the AMP, there were few opportunities for our members to participate in sharing knowledge outside of the routine of submitting abstracts and attending conferences and workshops. From previous evaluation findings of the project, I knew that members were willing to share knowledge, and were looking for support with a practical task, the writing of scientific abstracts. Situating abstract mentoring as a key opportunity for web-based distance knowledge sharing and collaboration between the organization and its members, I invited the membership manager to reach out to our members to volunteer as mentors for the project.

As the mentors network expanded, we began categorising the mentors according to expertise areas, qualifications, years of experience, and prior publications. We also made sure we had a

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balanced representation from various research and practice individuals, peers and experts. In two years, we doubled our number of mentors from 42 to 80. They came from a variety of settings, and were sensitised to provide culturally appropriate support to learners seeking feedback.

Description 2 – Maintaining the network

Communication proved to be key to ensuring collaboration, feedback, and mentoring was efficient and smooth. By engaging two software developers, we designed a back-office to manage the distribution of the work each morning and each afternoon, and provide data for monitoring quality. We increased the capacity of the back-office in Phase 2 as we increased our capacity to provide mentoring.

Growing the network proved to be critical in the second year. Many junior researchers had found the Phase 1 programme as a crucial and relevant learning experience, and recommended e-mentoring to their colleagues. To expand outreach, recruit additional mentors, and increase awareness of the targeted opportunity, we engaged the media team for support in designing flyers (http://www.iasociety.org/Web/WebContent/File/AMP Submitter Flyer.pdf) to distribute at various conference booths and on online sites of associated NGOs. This work was both planned as well as emergent, as insights emerged from our daily interactions and monitoring of the processes and outcomes.

We took particular care to nurture relationships with the network. After presenting the results of the project at a network meeting at the IAS 2009 conference, and valuing the network's significant contributions to success, we facilitated a 'World Cafe' dialogue to gather feedback on how to improve the project. These findings (http://www.iasociety.org/Web/WebContent/File/IAS Mentors Outreach Meeting Summary_IAS2009.pdf) were synthesized and disseminated through the dedicated project website (http://www.iasociety.org/Default.aspx?pageId=107) and an email message. Surveys indicated that there was little interest in a sophisticated online community with forums or discussions. Instead, the discussions showed that mentors were happy to engage in small, specific ways that allowed them to contribute rapidly and meaningfully in sharing their knowledge and developing the skills of juniors. This need for practical and targeted educational opportunities that do not take professionals away from their work has also been highlighted in developing e-learning health care professional development for dispersed clinicians (Taylor et al., 2008).

As part of the network dissemination strategy, we produced abstract writing workshop materials (http://www.iasociety.org/Default.aspx?pageId=300). These were available for download by mentors wishing to prepare junior professionals in the steps of writing an abstract before submitting for e-mentoring. Workshops on scientific writing were also conducted in partnership with the organization's peer-reviewed journal at various conferences, where e-mentoring was featured prominently.

After the first cycle of the project produced significant results, we posted these results onto the website, and wrote an article (http://www.iasociety.org/Web/WebContent/File/Newsletters/2009_11_IAS_Newsletter.pdf) for the newsletter that was distributed worldwide. As a result, the project team was invited to share our findings with a research group in the Caribbean who were experimenting with a similar mentoring initiative to improve the quality of research and writing. Such introductions helped us renew our network and led to further work collaborations. The project began to have a global profile thanks to the increase in relationships and connections.

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Description 3 – Activating the network

At any point during the project, we activated different aspects of the net depending on which task was 'live'. Nardi et al. (2002, p. 220) describe the active portion of a network as 'a live subnet' – a 'possible instance of an intensional network, rendered in a particular context of joint work'. We did this in the following ways:

Activating communications

After the success of Phase 1, we faced a variety of communications options facilitated by a variety of technologies to activate live subnets to sustain the project. For the mentors and submitters, we communicated using the automatic messaging service of the back-office that helped manage the volume of communications. For those with queries, we provided a specific e-mail address that we monitored twice a day, that was monitored regularly even during the Christmas break (Dec-Jan). Standardised reply e-mails were drafted as we built up a profile of frequently asked questions. Participants appreciated the reminder emails we sent in case they were behind in providing feedback.

We began to engage with the communications team as our project grew in stature. They quickly advised us on how to engage with the organization's media partners to promote the project for Phase 2. We had not done this in Phase 1, as we did not want to be deluged by submitters since our pool of mentors was still small. By Phase 2, we had recruited 80 mentors, and promoted the project on targeted websites like CCO, AIDS Map, as well as to other NGOs whose members were preparing abstracts for the conference.

We tailored our messages to various audiences, stressing the free, targeted and rapid feedback the programme provided. To the academic sector, we prepared a formal research paper (http://www.iasociety.org/Web/WebContent/File/IADIS 2009_SINGH.pdf) and presentation based on the impact evaluation we had conducted. Here, we drew on literature on the benefits of mentoring for professional development, and the value of informal and collaborative learning (Cross, 2006; McPherson & Nunes, 2004) in distance professional education.

Activating buy-in and ownership

With specific organisations, we arranged meetings and presentations. As a result, we established an informal knowledge and resource sharing partnership with AuthorAID. We held a formal presentation to the conference Scientific Programme Committee, which resulted in the formal adoption of the project as a key element of the programme development. We engaged the staff and board of directors by conducting in-house presentations on Professional Learning, Technology and Conferences.

A key factor in the success of this initiative was the continued engagement of the network participants. Submitters who had succeeded in getting their abstracts accepted as a result of the mentoring were invited back in Phase 2 to become peer mentors. They stated that they had greatly appreciated the opportunity for feedback and support, and were proud of their new status as mentors. Mentors and mentees were invited to share their perspectives and experiences by giving brief speeches at the meeting at the IAS 2009 conference. Participants had a chance for face-to-face networking, and appreciated putting a face to their 'virtual' mentors. Importantly, it also showed the network how the organisation was deploying distance education to enhance relationships with its members. The fact that ties between participants themselves were weak did not seem to matter as much as the opportunity for specific support.

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Discussion

These observations on the intensional network are gathered from my insights during the various cycles of the abstract mentoring programme implementation described above. They indicate that the formal project plan and structure of the e-mentoring project did not account for the social processes and distributed connections that were vital in enabling targeted collaboration of different individuals at different points of the project. Using an intensional network to structure participation allowed for a dynamic action research approach. Each of the project team members had, in turn, their own intensional networks which could be activated to accomplish specific aspects of the project. Our network also included people from a broad array of organisations and individuals, each bringing their own history and culture, with whom we shared little other than the specific communications and sporadic network-wide messages. I thus found myself crossing boundaries of research, policy, and programming to broker and make knowledge as I coordinated different aspects of the project over time and distance. The social form of an intensional network was fluid. Creating, maintaining and activating relationships were more important than conventionally defined project roles, or the separated roles of educators and students. All of us had to learn to engage with the technology-mediated communication and learning approach, and could learn at our pace and at our level of interest. Practices were continually evolving and being shaped by the need to balance realising significant project outcomes with ensuring overall operational stability. People were coming and going from the network, with most staying because they valued the low-pressure engagement. Over the years, thanks to the cultivation of this intensional network, we were well positioned to ensure that e-mentoring became sustainable as a key approach to health care distance education in the organisation's new 5-year strategic plan.

Implications

The descriptions of the intensional network above have four key implications for the way for healthcare distance education can be more effectively designed and implemented for targeting developing country professionals to improve on the low impact of current approaches (Singh, 2010).

Firstly, it suggests that educators need to support distance learners with digital technologies and literacy skills to build social connections, acquire tacit knowledge, and facilitate practice-based, context-appropriate strategic learning, rather than online community participation (McPherson et al., 2008; Sandars et al., 2007; Burrows, 2003). With an intensional network that values learner agency, the focus narrows to accomplishing tasks and getting information and support for specific problems. Rather than traditional skills-based approaches in distance education, the intention becomes to improve practice as a network, whether a literacy practice such as abstract writing, or extended further down the line to clinical practice.

Secondly, when implementing digital technologies for distance education, educators can enhance the goal and value of intensional networks by taking a practice lens. In an intensional network, knowledge is always being constructed, and producing changes in practice as people go about getting things done. Instead of assuming a linear pathway between learning and change, a network approach situates all social agents as learners inside their practices, whether they are project implementing, administering, research writing, or mentoring. A network engaged in a practice does not distinguish between those doing the implementation and those being done to, but sees the relationships and interactions that affect each other. As we found, this exchange and cross-fertilisation is critical because it allows implementers and participants to gradually develop hybrid strategies for change.

Thirdly, a key implication from a practice perspective is that the learning-change equation is reconceptualised. Educators need to observe change closely through the micro-level processes of what people do to accomplish tasks inside a network, rather than traditional assessment and evaluation approaches using end-of-course surveys and feedback forms. How professionals come to engage in distance education that changes practice rather than simply impart new knowledge and skills, at whatever level in the hierarchy, depends on their access to agency and capital, or the choices and opportunity to think and act differently. Whether any intervention builds such agency and capital depends on its relevance and value to each participant on their learning pathways across social contexts. In this practitioner research to develop and implement an e-mentoring innovation, I was able to start with the existing work practices as the entry point to precipitate change. I taught the members of the IAS to try out and become new practices, such as becoming mentors, giving feedback, collaborating with their peers across countries with small-scale actions, using a new digital template, providing feedback, and feeling that they were part of an emerging network of practice that crossed borders.

I argue that my 'intensionally networked pedagogy' afforded all participants immersive opportunities to shape their daily practices using digital technologies. These include and subsume the conventional processes described as a step-by-step sequence of curriculum design, implementation and evaluation. In a network, the curriculum is an ongoing lived experience that overcomes the before/after dichotomies of 'factory' curriculum and instructional design approaches. Although we measured learning outcomes through quantitative indicators, such as numbers of successfully mentored abstracts that were eventually accepted, I argue that learning is best measured by all participants' participation in changing practice – e-mentoring on a specific skill valued by all stakeholders invested in improving the quality and value of an existing programme. To use Bourdieu's terms, this type of learning can build desirable 'habitus,' the dispositions and social and cultural capital associated with the field of health care professional development. Participants had a better sense of personal agency in reaching their goal of improving performance with the support of flexible and personalised distance education. The e-mentoring application alludes to findings from a recent study in Canada, which recommended that "efforts to introduce social technologies need to be accompanied with programs and support that both help learners (and teachers) gain competence, find useful applications and educate them to the potential pedagogical benefit of their use." (Anderson et al., 2010) Hence, distance educators need to develop time-sensitive context and process outcomes as well as product outcomes when measuring the impact of distance learning on changing practice(s).

Finally, a methodological implication emerges for distance education implementers. Through a practitioner research approach, I supported my organization build its educational strategy to confront the larger problems of widening access and using digital technology to level the playing field of scientific knowledge production and dissemination. As the intensional network facilitated the flow of information and support, it began to exert influence across the organization, enabling more access to financial resources and political support for decision-making. These reinforcements, as argued by Lin (1999), are crucial resources for networks to capture and harness capital collectively for empowerment. This social capital was then mobilized for stabilizing the implementation and enlarging its impact year on year without reinventing the wheel. By avoiding a potentially disruptive critique of existing approaches, or a top-down enforcement of technology for learning, the adoption of an intensional network approach allowed continuous improvement to e-mentoring through incremental shifts, to come to be recognized socially and institutionally as transformational. Thanks to a simple in-house innovation, this programme is now being implemented in its 5th year.

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Conclusion

Although unique challenges and needs have been identified, distance education models for health professionals today continue to mirror the traditional curriculum and pedagogies of medical education, where the 'sage on stage' and disciplinary scientific knowledge reign supreme. In turn, new perspectives from social constructivist and situated learning have resulted in the explosion of online communities of practice. Sadly, the evidence shows that both approaches are struggling to realise the critical need to deploy digital technologies effectively to design healthcare distance education that contributes to developing a well-trained workforce, changes practice and improves healthcare outcomes in developing countries.

In this paper, I have presented an innovative intensional network approach that begins to address these problems. I have outlined the context, rationale, design, and presented qualitative findings of adopting this implementation approach for an e-mentoring project over three years. I have discusses the implications of the findings for the redesign of healthcare distance education with digital technologies.

As the findings above show, implementation is hardly the easy process written down as a generalisable project plan. Instead, educators working to improve effectiveness are likely to be more successful by initiating practitioner research and shepherding a 'knowledge ecology' (Siemens, 2005) that spans time and space while respecting individuals' agency and improving access to constructing and exchanging valuable resources.

These findings need to be considered critically by global health policymakers and practitioners looking for cost-effective approaches to scale-up health worker training and development. It is clear that in light of the rapid use of social media and digital technologies in society and in research, health and education, something needs to be done urgently to overcome the low impact of current distance educational approaches. It is also clear that social software and digital technologies are now being perceived as a potential 'killer app' to address barriers to scaling up distance learning with technologies (Anderson, 2008) and save time and money. More critical research thus needs to be done to integrate interdisciplinary insights from networked learning, digital culture, and learning technologies with the traditional curricula of healthcare.

Intensional networks offer distance education providers spaces for shaping control with freedom of distance teaching and learning, while collaborative design of digital technologies to solve problems can change practices and improve usability over time and space. Learning is not the content alone, but the power shifts, resources, discourses, connections and interactions. Capturing the various perspectives of managers, team members and end-users through practitioner research builds social and cultural capital to dynamically address barriers that emerge in the moment of solving operational challenges across the network to benefit users. Failure to do so is often the hidden cause behind the lack of success of current distance education approaches in changing practice. While this study has looked at the practice of scientific writing, e-mentoring offers innovative pedagogic possibilities to construct joint critical reflection processes with social digital tools towards realising evidence-based medicine sustainably. More empirical work is needed to identify critical aspects of social capital and agency and validate these realistically to evaluate potential for changing educational practice when implementing networked and digital technologies to improve learning across a variety of contexts. With practitioners positioned as intensional networkers, the methodology of practitioner research to design, deliver and evaluate simple innovations such as e-mentoring disrupts the implementation gap of existing pedagogical models and has significant value in improving the impact of digital technologies for distance education in a networked global health context.

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